

IN THE CLAIMS

1. (Currently amended) A method of processing a semiconductor substrate, comprising the steps of:
- providing a semiconductor substrate having a surface with a contact formed therein;
- depositing a conductor layer on the semiconductor substrate surface, wherein said conductor layer comprises a conductor;
- forming an impurity layer in said conductor layer, wherein the impurity layer is formed intermittently only during about the last 30% of the deposition of the conductor layer, said impurity layer having a melting point temperature and surface tension less than that of said conductor; and
- heating the conductor layer to a reflow temperature, said reflow temperature being sufficient to cause the layers to reflow.

2-29. (Canceled).

30. (Currently amended) A method of forming a contact, the method comprising the following steps performed in order:
- (a) providing a substrate having a contact hole formed therein, the contact hole exposing a portion of a conductive area of the substrate;
- (b) depositing conductive material into the contact hole, the conductive material having a melting point;
- (c) depositing an impurity into the contact hole, the impurity causing the melting point of the conductive material to lower, wherein depositing the impurity comprises intermittently depositing the impurity during the deposition of the conductive material; and

(d) reflowing the conductive material and the impurity.

31. (Original) The method, as set forth in claim 30, wherein the conductive material is deposited within a temperature range of about 300 degrees Celsius to about 500 degrees Celsius.

32. (Original) The method, as set forth in claim 30, wherein said impurity is derived from an impurity source containing at least one of silicon, germanium, a halogen, a metal, and a metal-based material.

33. (Original) The method, as set forth in claim 30, wherein step (c) comprises the step of depositing impurities which migrate out of the contact hole.

34. (Original) The method, as set forth in claim 30, wherein step (c) comprises the step of depositing impurities which do not migrate out of the contact hole.

35. (Original) The method, as set forth in claim 30, wherein step (c) comprises the step of lowering the melting point of the conductive material by 10% to 60%.

36. (Canceled).

37. (Canceled).

38. (Previously presented) The method, as set forth in claim 30, wherein the impurity is deposited only during about the last 30% of the deposition of the conductive material.

39. (Canceled).

40. (Previously presented) A method of forming a contact, the method comprising the steps of:

- (a) providing a substrate having a contact hole formed therein, the contact hole exposing a portion of a conductive area of the substrate;
- (b) depositing conductive material into the contact hole, the conductive material having a surface tension; and
- (c) depositing an impurity intermittently onto the conductive material, while the conductive material is being deposited at a temperature that causes the conductive material to reflow, the impurity causing the surface tension of the conductive material to lower.

41. (Original) The method, as set forth in claim 40, wherein the conductive material comprises at least one of aluminum, aluminum alloy, tungsten, tungsten alloy, titanium, titanium alloy, copper, and copper alloy.

42. (Original) The method, as set forth in claim 40, wherein the impurity is derived from an impurity source comprising at least one of silane, disilane, germane, GeF₄, SiF₄, Cl₂F₂, ClF₃, ICl₃, ICl₅, TiCl₄, WF₆, and TaCl₅.

43. (Original) The method, as set forth in claim 40, wherein step (c) comprises the step of depositing impurities which migrate out of the contact hole.

44. (Original) The method, as set forth in claim 40, wherein step (c) comprises the step of depositing impurities which do not migrate out of the contact hole.

45. (Canceled).

46. (Canceled).

47. (Previously presented) The method, as set forth in claim 40, wherein the conductive material comprises aluminum, wherein the impurity is derived from TiCl₄, and wherein the impurity is deposited only during about the last 30% of the deposition of the conductive material.

48. (Previously presented) A method of filling a feature having a high aspect ratio, the method comprising the steps of:

- (a) depositing conductive material into the high aspect ratio feature, the conductive material having a surface tension; and
- (b) depositing an impurity onto the conductive material only during about the last 30% of the deposition of the conductive material at a temperature that causes the conductive material to reflow, the impurity causing the surface tension of the conductive material to lower.

49. (Original) The method, as set forth in claim 48, wherein the conductive material comprises aluminum and is deposited within a temperature range of about 300 degrees Celsius to about 500 degrees Celsius.

50. (Original) The method, as set forth in claim 48, wherein said impurity is derived from an impurity source containing at least one of silicon, germanium, a halogen, a metal, and a metal-based material.

51. (Original) The method, as set forth in claim 48, wherein the conductive material comprises at least one of aluminum, aluminum alloy, tungsten, tungsten alloy, titanium, titanium alloy, copper, and copper alloy.

52. (Original) The method, as set forth in claim 48, wherein step (b) comprises the step of depositing an impurity which tends to remain in place with the conductive material deposited therewith.

53. (Original) The method, as set forth in claim 48, wherein step (b) comprises the step of depositing an impurity which tends to migrate from a place relative to the conductive material deposited therewith.

54. (Original) The method, as set forth in claim 53, wherein step (b) comprises the step of depositing an impurity which migrates out of the high aspect ratio feature.

55. (Original) The method, as set forth in claim 53, wherein step (b) comprises the step of depositing an impurity which disperses throughout the conductive material.

56. (Original) The method, as set forth in claim 48, wherein step (b) comprises the step of lowering the melting point of the conductive material by 10% to 60%.

57. (Canceled).

58. (Original) The method, as set forth in claim 48, wherein step (b) comprises the step of depositing the impurity intermittently during step (a).

59. (Cancelled)

60. (Currently amended) A method of forming a contact, the method comprising the steps of:

- (a) providing a substrate having a contact hole formed therein, the contact hole exposing a portion of a conductive area of the substrate;
- (b) depositing conductive material into the contact hole, the conductive material having a surface tension; and
- (c) depositing an impurity into the contact hole onto the conductive material at a temperature that causes the conductive material to reflow, wherein the impurity causes the surface tension of the conductive material to lower and wherein the impurity does not form an alloy with the conductive material and wherein the impurity is deposited into the contact hole intermittently with the deposition of the conductive material.

61. (Original) The method, as set forth in claim 60, wherein the conductive material comprises at least one of aluminum, aluminum alloy, tungsten, tungsten alloy, titanium, titanium alloy, copper, and copper alloy.

62. (Original) The method, as set forth in claim 60, wherein the impurity is derived from an impurity source comprising at least one of silane, disilane, germane, GeF₄, SiF₄, Cl₂F₂, ClF₃, ICl₃, ICl₅, TiCl₄, WF₆, and TaCl₅.

63. (Cancelled).

64. (Original) The method, as set forth in claim 60, wherein step (c) comprises the step of depositing the impurity intermittently during step (b).

65. (Original) The method, as set forth in claim 60, wherein the conductive material comprises aluminum, wherein the impurity is derived from TiCl₄, and wherein the impurity is deposited after 70% of the conductive material has been deposited.